

Subject	Insect Taxonomy
Lect. No.	5
Date	5 / 2/ 2024

The class Insecta has 29 orders

(4 in Apterygota and 25 in Pterygota)

Subclass Apterygota classified into four Orders

1. Thysanura - Silverfish

Characters:

1- The insect's silver-light grey color, combined with the fish-like appearance of its movement. typically, 13–25 mm, dorsoventrally flattening.

2-Wingless insects. Most species are covered with overlapping silver-gray scales although some lack scales.

3-It also has two small compound eyes; other species are eyeless.

It has long antennae.

4-Median caudal filament present at the tip of the abdomen between the two long cerci.

Family-Lepismatidae - The silverfish *Lepisma saccharinum*



2-Order: Collembola (Springtails)

They are found in damp soil, in decaying vegetable matter, under bark of trees. A few species may be found on the surface of fresh-water pools.

General characters:

1-Minute to medium – small size insects rarely exceeding 5 mm in length.

2-Mouthparts entognathous, principally adapted for biting.

3-Antenna usually 4-segments.

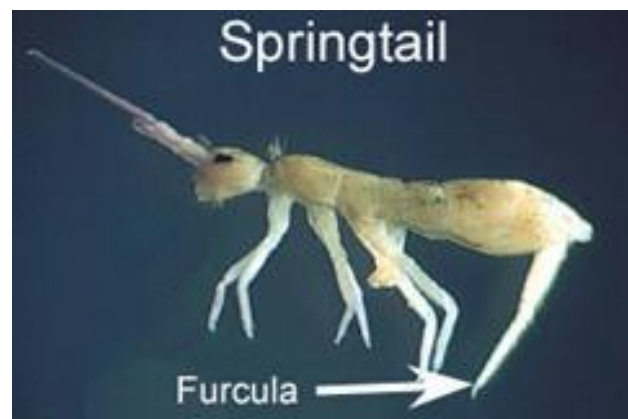
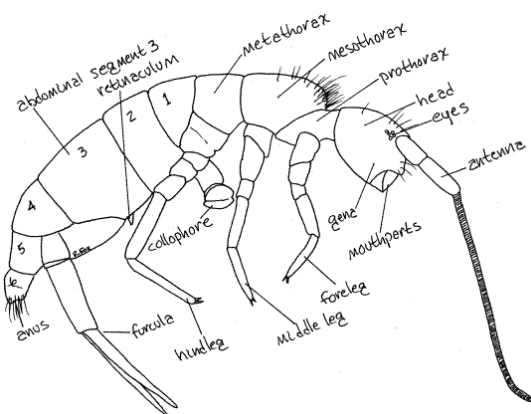
4-Compound eyes absent.

5-Abdomen 6 segments, usually with three pairs of appendages

a- Collophore or ventral tube or glue peg.

b. Retinaculum or tenaculum or catch,

c. Furcula or Furca:



3-Order: Protura (Telsontails)

General characters:

- 1-Minute whitish insects (0.5 – 2) mm in length.
- 2- Head is cone-shaped. eyes and antennae absent. Mouthparts are chewing type, well-developed and are largely withdrawn into the head,
- 3-Styli are present on the 3 basal abdominal segments.
- 4-The abdomen of adult consist of 12 segments.

They feed on decomposing organic matter.

***Acerentomon* sp.**



4-Order Diplura - Two-pronged Bristletails –

General characters:

- 1-Small wingless insects, lacking eyes.
- 2-Antennae long, with many segments.
- 3- Mouthparts for biting.
- 4-Tarsi are 1-segmented.
- 5- Abdomen with a pair of jointed, filamentous cerci of variable length or with stout terminal pincers.

Examples :*Campodea*_sp.



**The sub-class Pterygota has two divisions,
Exopterygota and Endopterygota based on the wing
development.**

Character	Exopterygota	Endopterygota
1. Wing development	* External	* Internal
2. Type of metamorph-	* Incomplete (Hemimetabola) or gradual	* Complete (Holometabola)
3. Pupal stage	* Absent	* Present
4. Immature stage	* Naiad or Nymph	* Larva
5. No. of orders	* 16	* 9

EXOPTERYGOTA Orders:

- 1-Ephemeroptera – Mayflies, 2-Odonata-Dragonfly, Damselfly**
- 3. Plecoptera – Stonefly, 4. Grylloblattodra - Rock crawlers**
- 5. Orthoptera-Grasshopper, locust,cricket, mole cricket**
- 6. Phasmida-stick insect, leaf insect, 7. Dermaptera-Earwigs**
- 8. Embioptera-Webspinners/Embids, 9. Dictyoptera-cockroach, praying mantis, 10. Isoptera – Termites,11. Zoraptera - Zorapterans**
- 12. Psocoptera - Book lice, 13. Mallophaga - Bird lice**
- 14. Siphunculata - Head and body louse, 15. Hemiptera - Bugs**
- 16.Thysanoptera – Thrips**

Subclass:EXOPTERYGOTA

1-Order: Ephemeroptera: mayflies

Mayflies have only a short adult life ranging from a few hours up to a day or two depending on the species.

General characters:

1-Body a medium size, elongated, and very soft.

2-Antenna is small, bristle-like with multiple segments.

3-2 pairs of membranous wings, the front wing large and triangular shaped, Hind wings are small and rounded and, in some species are vestigial or absent.

4-Mouthparts in adults are reduced.

5-Tip of the abdomen usually with 3 very long filamentous cerci with multiple segments, some contain median caudal

7-Ovipositor are absent

8-Mayfly nymphs are aquatic and have a similar body shape to the adults but lack wings.

Families of Order Ephemeroptera - Mayflies

1-Family: Leptophlebiae

e.g. *Leptophlebia* sp.

2-Family: Ephemeridae

e.g *Hexagenia limbata*



2-Order: Odonata: Dragonflies and Damselflies

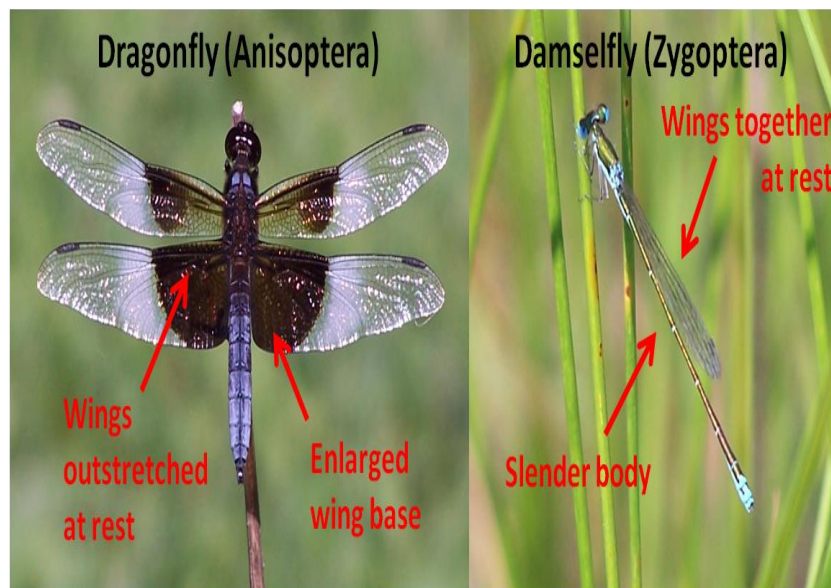
Order Odonata includes some of the most ancient, beautiful insects and some of the largest flying invertebrates ever to have lived.

General characters:

- 1-Aquatic larva(nymph (naiad) with posterior tracheal gills. -terrestrial adult
- 2-Highly predaceous larva or adult
- 6- Minute antennae,
- 7-Extremely large eyes.
- 8-Two pairs of transparent membranous wings with many small veins.
- 9-Long slender abdomen

Odonata consists of three suborder

- 1- Suborder: **Anisoptera** (which includes dragonflies).
- 2- Suborder: **Zygoptera** (which includes damselflies).
- 3- Suborder: **Anisozygoptera** (a relict group represented by only two living species.)



4- Order: Isoptera(Termites) 'white ants'

Termites are social insects and live in colonies consisting of a queen, sterile workers and soldiers and winged reproductive males and females known as elates. Colonies in wood or soil; feed directly on wood or wood products.

General characters:

- 1- Workers and soldiers 6 - 13 mm queens much larger
- 2- Pale, elongate body and soft. The head is heavily sclerotized.
- 3- Pairs of membranous wings of equal length. Wings are present in reproductive castes only and shed after mating.
- 4-Chewing mouthparts. Soldiers have enlarged or specially modified mandibles
- 5-Antennae about the same length as the head

Families of Order Isoptera:

- 2-Family: Mastotermitidae e.g. *Mastotermes darwiniensis*
- 3-Family Termitidae higher termites e.g. *Microcerotermes gracilis*



10-Order: Embioptera-Webspinners/Embids

The order **Embioptera**, are a small group of mostly tropical and subtropical insects. More than 400 species in 11 families have been described, the oldest known fossils of the group being from the mid-[Jurassic](#).

General characters:

- 1-Reddish, cylindrical, long, narrow and highly flexible.15 - 20 mm. The body form of these insects is completely specialized for the silk tunnels
- 2-The head has projecting mouthparts with chewing mandibles.
- 3- The compound eyes are kidney-shaped, there are no ocelli.
- 4- Antennae the thread-like are long, with up to 32 segments, flexible.

Major Families of Order:

- 1- Family: Embiidae e.g. ***Embia spp***
- 2- Family: Australembiidae
- 3- Family: Teratembidae



9-Order: Thysanoptera – Thrips

They are closely related to [bugs \(Hemiptera\)](#) with similar sucking mouthparts

General characters:

- 1- Cylindrical, elongate body. 0.5-15mm
- 2-Sucking and rasping mouthparts.
- 3-2 pairs of slender membranous wings that are fringed with long hairs.
- 4-Legs that end in a bladder-like organs not a typical tarsal claw.

Major Families of Order:

- 1-Family:Thripidae, common thrip e.g. *Belothrips morio*
- 2-Family: Heterothripidae e.g. *Heterothrips vitis*
- 3-Family: Melanthripidae e.g. *Melanthrips digitus*



8- Order: Dermaptera: earwigs

The order name is derived from Greek (derma=skin; pteron=wing). The common name is derived from the erroneous superstition that earwigs crawl into the ears of sleeping people. The order [Dermaptera](#) is cosmopolitan and currently consists of about 1200 named species. Dermaptera are most common in tropical and warm temperate regions.

General characters:

- 1- Elongate insects 50 mm long. , m chewing mothpart
- 2-The forewings are short, leathery, and elytriform or modified into tegmina. The hind wings are large, membranous, fanlike or circular, and folded under the forewings when the insect is at rest.
- 3-The legs are cursorial, tarsus 3 segments.
- 4-The abdomen is often telescopic, and the cerci are modified into forceps that can pinch if the earwig is handled.
- 5-Earwigs are typically nocturnal insects that are sometimes collected at lights.

Major Families of Order:

1-Family: Forficulidae (Common earwings) — *Forficula auricularia*.



2-Family: Labiduridae — Reddish-brown earwing - *Labidura riparia*



3-Family: Carcinophoridae — Dark brown - *Euborellia annulipes*

